

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/802,622	KLUMPEN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	SCOTT L. JARRETT	3624	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment Feb. 12, 2009; Interview Mar. 3, 2009.
2. ☒ The allowed claim(s) is/are 1-5,7-15,17-25 and 27-58.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
  - \* Certified copies not received: \_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_.

**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

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|---|--|
| <ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</li> <li>2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br/>Paper No./Mail Date ____</li> <li>4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br/>of Biological Material</li> </ol> | <ol style="list-style-type: none"> <li>5. <input type="checkbox"/> Notice of Informal Patent Application</li> <li>6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br/>Paper No./Mail Date <u>3/16/2009</u>.</li> <li>7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment</li> <li>8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance</li> <li>9. <input type="checkbox"/> Other ____.</li> </ol> |
|---|--|

/Scott L Jarrett/  
Primary Examiner, Art Unit 3624

### **EXAMINER'S AMENDMENT**

This Examiner's Amendment is in response to Applicant's amendments submitted February 12, 2009 and an interview held with Mr. Robert Lord on March 3, 2009. Applicant's amendment amended claims 1-5, 7-15, 17-25 and 27-58 and canceled claims 6, 16 and 26.

Claims 1, 10, 11, 20 and 21 are amended below, via examiner's amendment. Claims 1-5, 7-15, 17-25 and 27-58 are currently pending and allowed herein.

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Robert Lord (Reg. No. 46,479) on March 3, 2009.

### **Amendments to the Claims**

1. (Currently Amended) A method of well planning in an automatic well planning system, comprising the steps of:

selecting one or more tasks in a task manager executing on a processor, said one or more tasks comprising a drillstring design task;

verifying<sub>1</sub> by a task dependency<sub>1</sub> a proper order of said one or more tasks, said task dependency describing input attributes and results attributes required for each of said one or more tasks;

retrieving<sub>1</sub> by said task manager executing on said processor, from a task base one or more sets of instructions associated with said one or more tasks selected in the task manager and verified by said task dependency;

retrieving<sub>1</sub> by said task manager executing on said processor, from an access manager one or more sets of input data associated with said one or more sets of instructions retrieved by said task manager from said task base, said one or more sets of input data comprising pore pressure, fracture gradient, and unconfined compressive strength;

verifying that each set of input data of said one or more sets of input data retrieved by said task manager from said access manager is received by a corresponding one of said one or more sets of instructions retrieved by said task manager executing on said processor from said task base;

executing, by said task manager executing on said processor, said one or more sets of instructions and using, by said task manager executing on said processor, said

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one or more sets of input data to generate a set of results comprising a summary of a drillstring in each hole section of a wellbore;

displaying, by a task view base, said set of results on a display device;

changing, by a navigation control in response to a user input, one of said sets of input data retrieved by said task manager, executing on said processor, from said access manager, thereby generating changed input data;

identifying a portion of said one or more sets of instructions affected by said changed input data based on said task dependency;

re-executing, by said task manager executing on said processor, said portion of said one or more sets of instructions and using, by said task manager executing on said processor, said changed input data to generate a second set of results; and

displaying, by ~~[[a]]~~ said task view base, said second set of results on said display device, said second set of results comprising drillstring design output data.

10. (Currently Amended) The method of claim 9, wherein said second set of results further comprises one ~~[[is]]~~ selected from a group consisting of: risk assessment output data ~~[[,]]~~ and bit selection output data ~~, and drillstring design output data~~.

11. (Currently Amended) A program storage device readable by a machine tangibly embodying a program of instructions executable by the machine to perform method steps adapted for well planning in an automatic well planning system, said method steps comprising:

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selecting one or more tasks in a task manager, said one or more tasks comprising a drillstring design task;

verifying by a task dependency a proper order of said one or more tasks, said task dependency describing input attributes and results attributes required for each of said one or more tasks;

retrieving by said task manager from a task base one or more sets of instructions associated with said one or more tasks selected in the task manager and verified by said task dependency;

retrieving by said task manager from an access manager one or more sets of input data associated with said one or more sets of instructions retrieved by said task manager from said task base, said one or more sets of input data comprising pore pressure, fracture gradient, and unconfined compressive strength;

verifying that each set of input data of said one or more sets of input data retrieved by said task manager from said access manager is received by a corresponding one of said one or more sets of instructions retrieved by said task manager from said task base;

executing, by said task manager, said one or more sets of instructions and using, by said task manager, said one or more sets of input data to generate a set of results comprising a summary of a drillstring in each hole section of a wellbore;

displaying, by a task view base, said set of results on a display device;

changing, by a navigation control in response to a user input, one of said sets of input data retrieved by said task manager from said access manager thereby generating changed input data;

identifying a portion of said one or more sets of instructions affected by said changed input data based on said task dependency;

re-executing, by said task manager, said portion of said one or more sets of instructions and using, by said task manager, said changed input data to generate a second set of results; and

displaying, by ~~[[a]]~~ said task view base, said second set of results on said display device, said second set of results comprising drillstring design output data.

20. (Currently Amended) The program storage device of claim 19, wherein said second set of results further comprises one ~~[[is]]~~ selected from a group consisting of: risk assessment output data ~~[[,]]~~ and bit selection output data ~~, and drillstring design output data.~~

21. (Currently Amended) An automatic well planning system, comprising:

task manager apparatus adapted for receiving one or more tasks selected by a user, said one or more tasks comprising a drillstring design task;

task dependency apparatus adapted for verifying a proper order of said one or more tasks, wherein said task dependency apparatus describes input data attributes and results attributes required for each of said one or more tasks,

said task manager apparatus retrieving from a task base one or more sets of instructions associated with said one or more tasks received in said task manager apparatus and verified by said task dependency apparatus,

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said task manager apparatus retrieving from an access manager one or more sets of input data associated with said one or more sets of instructions retrieved by said task manager from said task base, said one or more sets of input data comprising pore pressure, fracture gradient, and unconfined compressive strength;

translator apparatus adapted for verifying that each set of input data of said one or more sets of input data retrieved by said task manager apparatus from said access manager is received by a corresponding one of said one or more sets of instructions retrieved by said task manager apparatus from said task base,

said task manager executing said one or more sets of instructions and using said one or more sets of input data to generate a set of results comprising a summary of a drillstring in each hole section of a wellbore;

task view base apparatus adapted for displaying said set of results on a display device;

navigation control apparatus, responsive to a user input, adapted for changing said one or more sets of input data retrieved by said task manager apparatus from said access manager thereby generating one or more sets of changed input data,

said task manager apparatus identifying a portion of said one or more sets of instructions affected by said changed input data based on said task dependency;

said task manager apparatus re-executing said portion of said one or more sets of instructions and using said one or more sets of changed input data to generate a second set of results,

said task view base apparatus displaying said second set of results on said display device, said second set of results comprising drillstring design output data.

### **ALLOWANCE**

The following is an Allowance. Claims 1-5, 7-15, 17-25 and 27-58 are currently pending and allowed below.

### **REASONS FROM ALLOWANCE**

The following is an examiner's statement of reasons for allowance.

The present invention is directed to a system and method of automatic well planning system and method.

The closest prior art ??? fail to teach or suggest either singularly or in combination an automatic well planning system and method comprising:

selecting one or more drillstring design tasks; verifying, by a task dependency, a proper order of said one or more tasks, said task dependency describing input attributes and results attributes required for each of said one or more tasks; retrieving from a task base one or more sets of instructions associated with said one or more tasks selected in the task manager and verified by said task dependency; retrieving from an access manager one or more sets of input data associated with said one or more sets of instructions retrieved by said task manager from said task base, said one or more sets of input data comprising pore pressure, fracture gradient, and unconfined compressive strength; verifying that each set of input data of said one or more sets of input data retrieved by said task manager from said access manager is received by a corresponding one of said one or more sets of instructions retrieved by said task manager executing on said processor from said task base; executing said one or more sets of instructions and using, by said task manager executing on said processor, said one or more sets of input data to generate a set of results comprising a summary of a drillstring in each hole section of a wellbore; displaying, by a task view base, said set of results; changing, by a



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navigation control in response to a user input, one of said sets of input data retrieved by said task manager from said access manager, thereby generating changed input data; identifying a portion of said one or more sets of instructions affected by said changed input data based on said task dependency; re-executing the portion of said one or more sets of instructions and using, by said task manager executing on said processor, said changed input data to generate and display, via the task view base, dillstring design results (second set of results) as recited in independent Claims 1, 11 and 21.

Further it is noted that Applicant's arguments, see Paragraphs 2, 4, Page 22, filed February 12, 2009, with respect to the rejection(s) of claim(s) 1 under 35 U.S.C. 103(a) have been fully considered and are persuasive.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Goodman, U.S. Patent No. 5,416,697, teach a system and method for drill bit selection in a well (well planning).
- Moran et al., U.S. Patent No. 6,424,919, teach a system and method for designing a drill bit.
- EP697652, Schlumberger, teach a system and method for drill bit design.
- GB2290330A, Baroid Technology, teaches a system and method for managing/executing a drill plan based on a plurality of well/wellbore variables.
- GB2367843A, Smith International, teaches a system and method for modeling drill bits/drillstrings in a well.
- Bourgoyne et al., Applied Drilling Engineering (1995), teach a plurality of well known well planning techniques including drill bit selection.
- Booth et al., Meeting Future Drilling Planning and Decision Support Requirements (2001), teaches a system and method for automated well planning comprising generating a well plan based on a plurality of well known well variables.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SCOTT L. JARRETT whose telephone number is (571)272-7033. The examiner can normally be reached on Monday-Friday, 8:00AM - 5:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bradley Bayat can be reached on (571) 272-6704. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Scott L Jarrett/  
Primary Examiner, Art Unit 3624